

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
17 November 2005 (17.11.2005)

PCT

(10) International Publication Number  
**WO 2005/107582 A1**

(51) International Patent Classification<sup>7</sup>: A61B 5/02, A61N 1/365

(21) International Application Number: PCT/SE2004/000698

(22) International Filing Date: 6 May 2004 (06.05.2004)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US): ST. JUDE MEDICAL AB [SE/SE]; S-175 84 Järfälla (SE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): TORPO, Maria [SE/SE]; Duvkullavägen 42B, 2 tr, S-172 37 Sundbyberg (SE). ÖHLANDER, Malin [SE/SE]; Mariatorget 6a, 3 trög, S-118 48 Stockholm (SE). BJÖRLING, Anders [SE/SE]; Handbollvägen 24G, S-175 53 Järfälla (SE). LJUNGSTRÖM, Karin [SE/SE]; Albert Landbergs Gränd 34, S-165 70 Hässelby (SE).

(74) Agents: GROTH & Co. KB et al.; Groth & Co. KB, Box 6107, S-102 32 Stockholm (SE).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

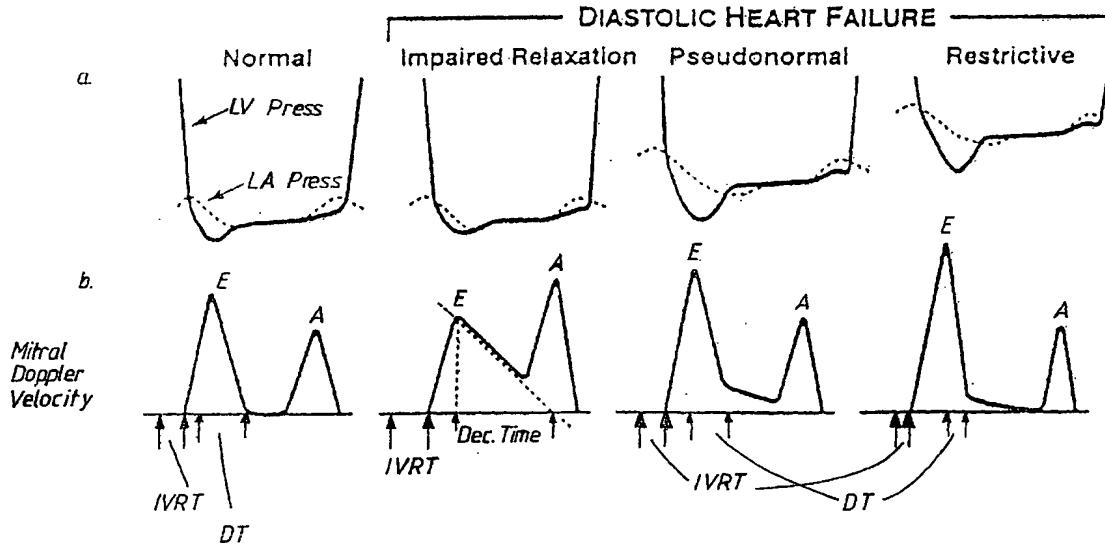
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declarations under Rule 4.17:**

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE,

[Continued on next page]

(54) Title: DETECTION OF DIASTOLIC HEART FAILURE



(57) **Abstract:** An implantable medical apparatus for detecting diastolic heart failure, DHF, comprises a DHF determining device for determining at least one DHF parameter for detecting a DHF state of the heart of a patient. The DHF determining device comprises a means for determining, as said DHF parameter, the time length (DT,IVRT) of a predetermined phase of diastole. A pacemaker comprises such an apparatus and control means for optimising pacing therapy and pacemaker settings depending on the determined time length. A corresponding method of detecting diastolic heart failure, DHF, comprises the step of determining at least one DHF parameter for detecting a DHF state of the heart of a patient. This step comprises determining, as said DHF parameter, the time length (DT,IVRT) of a predetermined phase of diastole.

WO 2005/107582 A1



EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,

IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

— of inventorship (Rule 4.17(iv)) for US only

**Published:**

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.